

Amendment(s) to the Claims

The following listing of claims replaces all prior versions and listings of claims in the present application:

Listing of Claims:

- Claims 1-42 (canceled).
- Claim 43 (withdrawn): The prosthetic limb of claim 67, further comprising a sleeve to be worn over the residual limb.
- Claim 44 (currently amended): A prosthetic limb socket and valve assembly, comprising:

a substantially impermeable sleeve to be worn over a residual limb, said sleeve having an inner surface and an outer surface;

a base attached to an interior distal end of said socket, said base ~~having a proximate surface positioned to face a distal end of said residual limb upon its insertion into said socket and~~ including at least one channel interior thereto for connecting an interior of said proximate surface socket to an exterior of said socket, said base located within said socket such that said channel remains unblocked by said residual limb until said residual limb is fully inserted into said socket;

an interface attached to a proximal surface of said base and having a proximal face positioned to receive a distal end of said residual limb upon its insertion into said socket, said interface provided with one or more passages therethrough for connecting said socket interior to said at least one channel;

a duct extending through said socket and connected to said channel; and

a valve coupled to said duct for controlling the flow of air through said channel caused by insertion of said residual limb into said socket;

wherein the sleeve-covered residual limb is retained in said socket by means of a vacuum created by expelling air in said socket through said valve assembly, said vacuum maintained by sealing contact between said outer surface of said sleeve and interior walls of said socket; and

wherein substantially no air pockets remain between said distal end of said residual limb and said proximal surface face of said base interface once said residual limb has been fully inserted into said socket.

- Claim 45 (previously presented): The prosthetic limb and valve assembly of claim 44, wherein said valve is coupled to a pump which provides a forced transfer of air to or from the socket interior.

- Claim 46 (previously presented): The prosthetic limb and valve assembly of claim 44, wherein said base includes an attachment means adapted to releasably attach an upright assembly to the distal end of the socket.

- Claim 47 (previously presented): The prosthetic limb and valve assembly of claim 44, wherein said base is adapted to be removably fitted within the socket interior at the distal end of the socket.

- Claim 48 (currently amended): The prosthetic limb and valve assembly of claim 44, wherein said ~~base includes a proximate~~ interface comprises a flexible cushion portion.

- Claim 49 (canceled).

- Claim 50 (currently amended): A prosthetic limb comprising:

a substantially impermeable sleeve to be worn over a residual limb;

a socket having a distal end, and an interior including a receiving cavity configured to ~~contain~~ substantially conform to the exterior of a wearer's sleeve-covered residual limb, said receiving cavity having an inner surface that provides sealing contact with a substantial portion of an outer surface of said sleeve; and

a valve assembly including a residual limb interface attached to a subjacent base that is removably coupled to said installed at a distal end of said socket receiving cavity, said valve assembly and providing a fluid communication with pathway from said receiving cavity through said base, said valve assembly located such that fluid transfer from within said receiving cavity is enabled prior to full insertion of said residual limb into said socket ;

wherein insertion of said residual limb into said socket forces air in said socket out through said valve assembly, thereby creating a vacuum within said receiving cavity that retains said residual limb and is maintained by said sealing contact between said inner surface of said receiving cavity and said outer surface of said sleeve; and

wherein substantially no air pockets remain between a distal end of said residual limb and a ~~bottom of~~ mating surface of said ~~receiving cavity~~ residual limb interface once said residual limb has been fully inserted into said socket.

- Claim 51 (previously presented): The prosthetic limb of claim 50, wherein said valve is coupled to a pump which provides a forced transfer of air to or from the socket interior.

- Claim 52 (currently amended): The prosthetic limb of claim 50, ~~further comprising a wherein said base attached to the interior distal end of the socket, having~~ includes a proximate proximal surface, including having at least one channel extending through ~~said proximate surface therethrough.~~

- Claim 53 (currently amended): The prosthetic limb of claim 52, wherein the shape of said base is adapted to ~~be removably fitted within~~ mimic the shape of the socket interior at the distal end of the socket.
- Claim 54 (previously presented): The prosthetic limb of claim 52, wherein said base includes an attachment means adapted to releasably attach an upright assembly to the distal end of the socket.
- Claim 55 (currently amended): The prosthetic limb of claim 52, wherein said ~~base~~ includes a proximate residual limb interface comprises a flexible cushion portion.
- Claim 56-63 (canceled).
- Claim 64 (withdrawn): A valve assembly for a prosthetic limb socket, comprising:
 - a base adapted to be removably fitted within the socket interior at the distal end of the socket, said base having a proximate surface, including at least one channel extending through said proximate surface;
 - a duct extending through said socket, connected to said channel; and
 - a valve coupled to said duct for controlling the flow of air therethrough.
- Claim 65 (withdrawn): A method for attaching a prosthesis including a suction socket having an open proximal end for receiving a residual limb and a distal end , comprising:
 - (a) rolling a sleeve over the residual limb;
 - (b) installing a valve means into said distal end of said suction socket, said valve connected to a duct extending through said socket;
 - (c) positioning said residual limb with said sleeve into said open proximal end of said suction socket; and

(d) drawing air through said duct by means of a vacuum pump to create a negative pressure between said sleeve and said distal end of said suction socket such that said sleeve is pulled into full engagement within said suction socket.

- Claim 66 (withdrawn): A method for donning or doffing a suction suspension prosthesis, said prosthesis including a sleeve to be worn over the residual limb, a suction socket having an open proximal end for receiving said residual limb and said sleeve and a distal end, comprising:

influencing air pressure between said sleeve and said distal end of said socket;

decreasing the air pressure to a negative pressure to draw said liner and residual limb into said suction socket or increasing the air pressure to a positive pressure to expel said liner and said residual limb from said suction socket.

- Claim 67 (withdrawn): A valve assembly for use with a prosthetic limb having a prosthetic limb socket shaped for receiving a patient's residual limb, the socket having a socket wall, a socket interior, a proximal opening, and a distal end, the valve assembly comprising:

a base having a first surface and a second surface, adapted to be fitted within the socket interior at the distal end of the socket such that said first surface faces the socket interior and such that said second surface faces the socket wall, said base including a channel extending therethrough providing fluid communication between said first surface and said second surface;

a first attachment mechanism, carried on said base, adapted to releasably attach an upright assembly to the distal end of the socket when said base is fitted within the socket interior at the distal end of the socket; and

a valve coupled to said base for controlling the flow of air through said channel.

- Claim 68 (withdrawn): The valve assembly of claim 67, wherein said valve assembly further comprises a seal extending from said base, adapted to provide an air-tight seal between said base and the socket wall when said base is fitted within the socket interior at the distal end of the socket.

- Claim 69 (withdrawn): The valve assembly of claim 68, further comprising:

a cushion carrier on said base, having a proximate end and a distal end, said proximate end being adapted to abut a wearer's residual limb.

- Claim 70 (withdrawn): The valve assembly of claim 69, wherein said cushion is formed from an elastomeric material and said cushion includes said seal.

- Claim 71 (withdrawn): The valve assembly of claim 67, wherein said base includes a second attachment mechanism adapted to releasably attach said base within the socket interior.

- Claim 72 (withdrawn): The valve assembly of claim 71, wherein said first and said second attachment mechanisms include a screw- or bolt-receiving hole extending into said base.

- Claim 73 (withdrawn): The valve assembly of claim 67, wherein said valve includes an open/close port, said open/close port allowing transfer of air through said valve when said open/close port is open.

- Claim 74 (withdrawn): The valve assembly of claim 67, wherein said first attachment mechanisms include a screw- or bolt-receiving hole extending into said base.

- Claim 75 (withdrawn): The valve assembly of claim 74, wherein said screw- or bolt-receiving hole is threaded.

- Claim 76 (withdrawn): A valve assembly for use with a prosthetic limb having a prosthetic limb socket shaped for receiving a patient's residual limb, the socket having a socket wall, a socket interior, a proximal opening, and a distal end, the valve assembly comprising:

a base including a flexible exterior, a chamber therewithin, and at least one channel extending into said chamber, said channel being adapted to provide fluid communication between said chamber and the interior of the socket when said base is fitted within the socket interior at the distal end of the socket;

a duct engaged with said base and in fluid communication with said chamber;
and

a valve coupled to said duct for controlling the flow of air therethrough;

whereby said base is adapted to be inserted through the proximal opening and fitted within the said socket interior at the distal end of the socket, and said flexible exterior is adapted to abut the socket wall so as to provide an airtight seal between said base and the socket wall when the base is fitted within the socket interior at the distal end of the socket.

- Claim 77 (withdrawn): The valve assembly of claim 76, further comprising an attachment mechanism carried on a distal end of said base, said attachment mechanism being adapted to secure said base within the distal end of a socket and to attach an upright assembly to the distal end of the socket.

- Claim 78 (withdrawn): The valve assembly of claim 77, wherein said attachment mechanism includes a screw- or bolt-receiving hole extending into a distal surface of said base.

- Claim 79 (currently amended): A prosthetic limb, comprising:

a prosthetic limb socket shaped for receiving a patient's residual limb, said socket having a socket wall[,]
forming a socket interior and a socket exterior, said socket having a proximal opening, and a distal end;

an external prosthetic limb assembly for attachment to an said socket exterior at said distal end of said prosthetic limb socket;

a base fitted within said socket interior at said distal end of said socket, a periphery of said base providing an air-tight seal with said socket wall, said base further including a channel opening onto said socket interior;

an attachment mechanism, carried on said base, for facilitating releasable attachment of said prosthetic limb assembly to said exterior distal end of said prosthetic limb socket; and

a valve coupled to said base for controlling the flow of air through said channel.

- Claim 80 (previously presented): The prosthetic limb of claim 79, wherein a substantially annular projection extending from said base is used to provide said air-tight seal between said base and said socket wall.

- Claim 81 (previously presented): A prosthetic limb, comprising:

a prosthetic limb socket shaped for receiving a patient's residual limb, said socket having a socket wall, a socket interior, a proximal opening, and a distal end;

an upright assembly;

a base-plate fitted within said socket interior at said distal end of said socket, said base-plate including a channel extending into said base-plate and opening onto said socket interior;

a valve coupled to said base-plate for controlling the flow of air through said channel; and

a bolt extending from said upright assembly, through said socket wall and into said base-plate;

whereby said base-plate facilitates the passage of air from said socket interior and also facilitates the coupling of the upright assembly to an exterior distal end of said socket.

- Claim 82 (previously presented): The prosthetic limb of claim 81, further comprising an air-tight seal between said base-plate and said socket wall.

- Claim 83 (currently amended): A prosthetic limb, comprising:

a prosthetic limb socket shaped for receiving a patient's residual limb, said socket having an open socket interior formed by walls and a bottom, a proximal opening, and a distal end;

a base-plate fitted within said socket interior at said bottom thereof, said base-plate having an interface attached to a proximal portion thereof and adapted to abut said residual limb once it is properly inserted into said socket, said base-plate further including a channel extending into said base-plate and opening onto said socket interior; and

a port communicating with said channel, said port facilitating the coupling of a pump thereto so as to provide a forced transfer of air to or from said open socket interior through said channel and said base-plate;

whereby said residual limb can be drawn into or forced out of said prosthetic limb socket by said forced transfer of air; and

wherein substantially no air pockets remain between a distal end of said residual limb and an abutting surface of said base-plate interface when said residual limb has been fully drawn into said socket.

- Claim 84 (previously presented): The prosthetic limb of claim 79, further comprising a sleeve for placement over said residual limb prior to insertion of said residual limb into said prosthetic limb socket.

- Claim 85 (previously presented): The prosthetic limb of claim 81, further comprising a sleeve for placement over said residual limb prior to insertion of said residual limb into said prosthetic limb socket.

- Claim 86 (previously presented): The prosthetic limb of claim 83, further comprising a sleeve for placement over said residual limb prior to insertion of said residual limb into said prosthetic limb socket.

- Claim 87 (new): A prosthetic limb comprising:

a substantially impermeable sleeve to be worn over a residual limb;

a socket having a distal end, and an interior including a receiving cavity configured to contain a wearer's sleeve-covered residual limb, said receiving cavity having an inner surface that provides sealing contact with a substantial portion of an outer surface of said sleeve;

a base attached to the interior distal end of the socket, said base having a proximate surface and including at least one channel extending through said proximate surface; and

a valve assembly removably coupled to said distal end of said socket and providing fluid communication with said receiving cavity, said valve assembly located

such that fluid transfer from within said receiving cavity is enabled prior to full insertion of said residual limb into said socket;

wherein insertion of said residual limb into said socket forces air in said socket out through said valve assembly, thereby creating a vacuum within said receiving cavity that retains said residual limb and is maintained by said sealing contact between said inner surface of said receiving cavity and said outer surface of said sleeve; and

wherein substantially no air pockets remain between a distal end of said residual limb and a bottom of said receiving cavity once said residual limb has been fully inserted into said socket.